

WHAT IS CLAIMED IS:

1. A panel for a liquid crystal display, comprising:
a substrate; and

5 at least one spacer formed over the substrate, the at least one spacer having a tapered shape with an inclination angle in the range of about 20 – about 70 degrees and a height in the range of about 2.5 – about 5.0 microns.

10 2. The panel of claim 1, further comprising:
at least one gate line;

at least one data line that crosses the at least one gate line;

at least one thin film transistor electrically connected to the at least one gate line
and the at least one data line; and

15 at least one pixel electrode electrically connected to the at least one thin film transistor.

20 3. The panel of claim 2, wherein the at least one spacer is located directly over the at least one data line.

4. The panel of claim 3, further comprising a passivation layer formed over the at least one data line.

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5. The panel of claim 4, wherein the at least one spacer is formed over the passivation layer.

6. The panel of claim 5, wherein the at least one spacer has a contact area with the passivation layer in the range of about 600 to about 1,000 square microns.

5 7. The panel of claim 1, wherein the at least one spacer has a compression deformation equal to or larger than about 0.40 microns in response to about 5 gf.

10 8. The panel of claim 1, wherein the at least one spacer comprises a plurality of spacers, and the concentration of the plurality of spacers throughout the panel is about 250 to about 450/cm².

15 9. The panel of claim 1, further comprising:
at least one color filter; and
a common electrode formed over the at least one color filter.

20 10. A liquid crystal display, comprising:
a first panel;
a second panel disposed opposite the first panel;
at least one spacer disposed between the first panel and the second panel, the spacer having a tapered shape with an inclination angle in the range of about 20 – about 70 degrees and a height in the range of about 2.5 – about 5.0 microns.

25 11. The liquid crystal display of claim 10, further comprising:
a liquid crystal layer disposed between the first panel and the second panel.

12. The liquid crystal display of claim 10, wherein the first panel comprises:
at least one gate line;
at least one data line that crosses the at least one gate line;
at least one thin film transistor electrically connected to the at least one gate line
5 and the at least one data line; and
at least one pixel electrode electrically connected to the at least one thin film transistor.

10 13. The liquid crystal display of claim 12, wherein the at least one spacer is disposed directly over the at least one data line.

14. The liquid crystal display of claim 13, wherein the first panel further comprises
15 a passivation layer formed over the at least one data line.

15. The liquid crystal display of claim 14, wherein the at least one spacer is formed
20 over the passivation layer.

16. The liquid crystal display of claim 10, wherein the at least one spacer has a
compression deformation equal to or larger than about 0.40 microns in response to about
25 5 gf.

17. The liquid crystal display of claim 10, wherein the at least one spacer comprises
a plurality of spacers, and the concentration of the plurality of spacers throughout the
liquid crystal panel is about 250 to about 450/cm².
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18. The liquid crystal display of claim 12, wherein the second panel comprises:
a substrate;
a black matrix formed over the substrate, the black matrix having at least one
opening facing the at least one pixel electrode of the first panel;
5 at least one color filter formed in the at least one opening of the black matrix;
and
a common electrode formed over the at least one color filter.

10 19. The liquid crystal display of claim 10, wherein the at least one spacer has a first
end in contact with the first panel and a second end in contact with the second panel.

15 20. The liquid crystal display of claim 19, wherein the first end of the at least one
spacer has a larger surface area than that of the second end of the at least one spacer.

20 21. The liquid crystal display of claim 19, wherein the first end of the at least one
spacer has a smaller surface area than that of the second end of the at least one spacer.

22. The liquid crystal display of claim 19, wherein the first end and the second end
of the at least one spacer has a contact area with a respective panel in the range of about
600 to about 1,000 square microns.

25 23. A method of forming a liquid crystal display, comprising:
forming a thin film transistor array panel including a plurality of pixel
electrodes;
30 forming a plurality of spacers over the thin film transistor array panel between
the plurality of pixel electrodes;

forming a common electrode panel;
coating a sealant over at least one of the thin film transistor array panel and the common electrode panel;
adhering the thin film transistor array panel and the common electrode panel
5 together to form a panel assembly; and
scribing the panel assembly to form a liquid crystal display.

24. The method of claim 23, further comprising:
10 forming a liquid crystal layer over the at least one of the thin film transistor array panel and the common electrode panel coated with the sealant

25. The method of claim 23, wherein the step of forming the plurality of spacers
15 comprises photolithography.

26. The method of claim 23, wherein the step of forming a thin film transistor array panel comprises forming a plurality of gate lines, a plurality of data lines, a plurality of
20 thin film transistors and a plurality of pixel electrodes over a first substrate.

27. The method of claim 23, wherein the step of forming a common electrode panel comprises forming a black matrix, a plurality of color filters, and a common electrode
25 over a second substrate.

28. The method of claim 23, wherein the plurality of spacers have a tapered shape with an inclination angle in the range of about 20 – about 70 degrees and a height in the
30 range of about 2.5 – about 5.0 microns.

29. The method of claim 26, wherein each of the plurality of spacers is located directly over a data line.

5 30. The panel of claim 23, wherein the plurality of spacers have a compression deformation equal to or larger than about 0.40 microns in response to about 5 gf.

10 31. The method of claim 23, wherein the concentration of the plurality of spacers throughout the liquid crystal display is about 250 to about 450/cm².

15 32. The method of claim 23, wherein each of the plurality of spacers has a first end in contact with the thin film transistor array panel and a second end in contact with the common electrode panel.

20 33. The method of claim 32, wherein the first end of each of the plurality of spacers has a larger surface area than that of the second end.

34. The liquid crystal display of claim 32, wherein the first end of each of the plurality of spacers has a smaller surface area than that of the second end.

25 35. The liquid crystal display of claim 32, wherein the first end and the second end of each of the plurality of spacers has a contact area with a respective panel in the range of about 600 to about 1,000 square microns.